

## **Waterbird Census of north Kerala Wetlands 2006 and 2007- A Report**

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### **Introduction**

North Kerala is endowed with a rich array of wetlands. 24 rivers flow through this region out of the total of 44 rivers in Kerala. Besides these river systems, there are inland wetlands like lakes, reservoirs, ponds and paddy fields spread over the area. But, avifaunal studies have been conducted only in a few of these and most of these wetlands are still unexplored. To gather information on the waterbirds of the region, the Kerala Forest and Wildlife Department, Social Forestry Division, Kannur and the Malabar Natural History society initiated a census programme for 2006 and 2007.

### **Study area**

The study area consisted of all major wetlands of north Kerala from Purathur (Bharathapuzha estuary) in the south to Manjeswaram in the north, which lies within the jurisdiction of Malappuram, Kozhikode, Wayanad, Kannur and Kasaragod districts. The wetlands belonged to various categories: sea shore, estuaries, tidal mudflats, mangrove swamps, backwaters, brackish as well as fresh water marshes, ponds and reservoirs, river banks and paddy fields.

### **Methods**

A workshop was organised for the birdwatchers of the region on 8<sup>th</sup> January 2006 at Kannur. All the major wetlands of the area were identified with inputs from the participants and an itinerary for the census was chalked out. It was also decided that apart from the true waterfowl, all wetland dependent species also were to be counted. In all, 161 species came under this category; all these birds had been previously recorded from Kerala. The census methodology was explained to the participants.

The censuses were conducted in January 2006 and 2007. Another census was conducted in April 2006 also. The wetlands were visited mostly in the morning hours; in places where tidal effect was a factor influencing the presence of birds, the census was conducted during low tide. Bird species were identified and actual counts taken covering all parts of the wetland possible by foot or by boat. Detailed information regarding the wetland such as type of the wetland, area, vegetation, ownership etc. was collected. As far as possible, complete coverage of the wetland with actual count of the birds was aimed. In case of partial coverage, percentage of coverage was noted in the data sheet. The data collected was recorded in the prescribed data sheets. About 40 birdwatchers participated in the census.

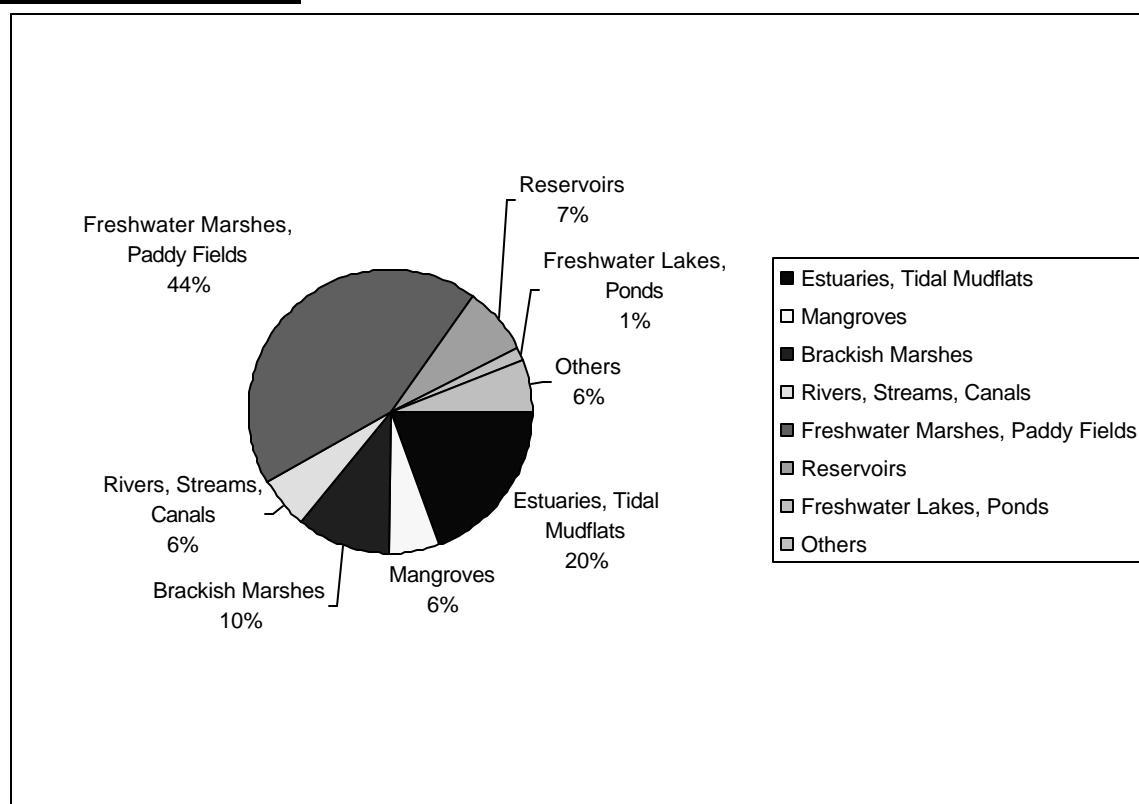
## Results and Discussion

### Wetlands

#### 1. Types of wetland

During census done in the two years, 75 wetlands were covered. The wetlands belonged to 7 distinct types but some of them could not be fitted into any of these categories and some were combination of different types. The share of each type of wetland in the study area is given in Figure 1. The majority of the wetlands (44%) were freshwater marshes and paddy fields. The second largest type was estuaries and tidal mudflats (20 %) followed by brackish marshes (10%). As most of the paddyfields, which was the major type of wetland, are dry during summer, and

**Figure 1: Wetland Types**



as most of the migratory birds had left the area by this time, the census in April 2006 showed low number of species as well as birds.

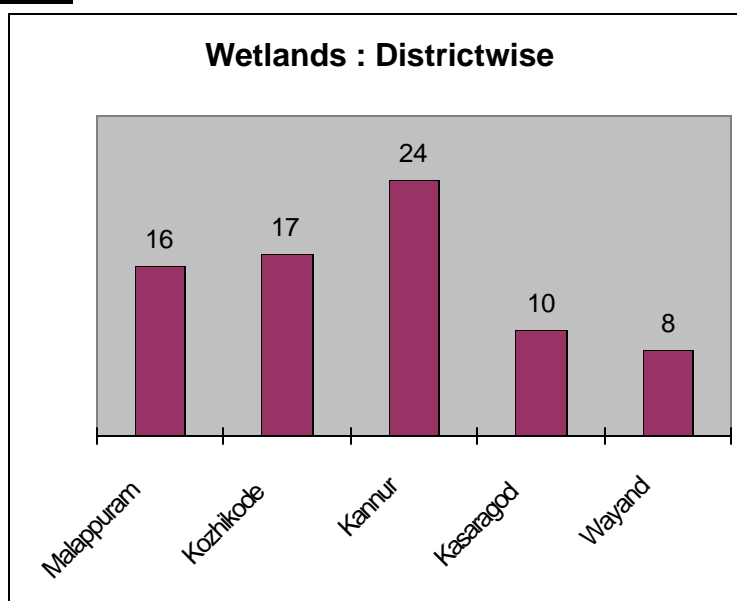
## 2. Ownership

45% of the wetlands were at least partly owned by the state and the rest were privately owned. As elsewhere in Kerala, none of the wetlands in the study area belonged to the Protected Area category. It was also difficult to define clearly the boundary between government owned land and private land. Though the major water bodies of the area were state owned, the banks and sometimes the mudflats and islands in the middle of water belonged to private individuals.

## 3. Districtwise distribution

Out of the 75 wetlands surveyed, 24 (32%) belonged to Kannur district. Wayanad district had the least number of wetlands. As coverage of the census increases in future, this pattern may change, as the present study does not claim to be exhaustive. The districtwise distribution of wetlands in the study area, as far as the present knowledge goes, is given in Figure 2.

**Figure 2:**



## Avifauna

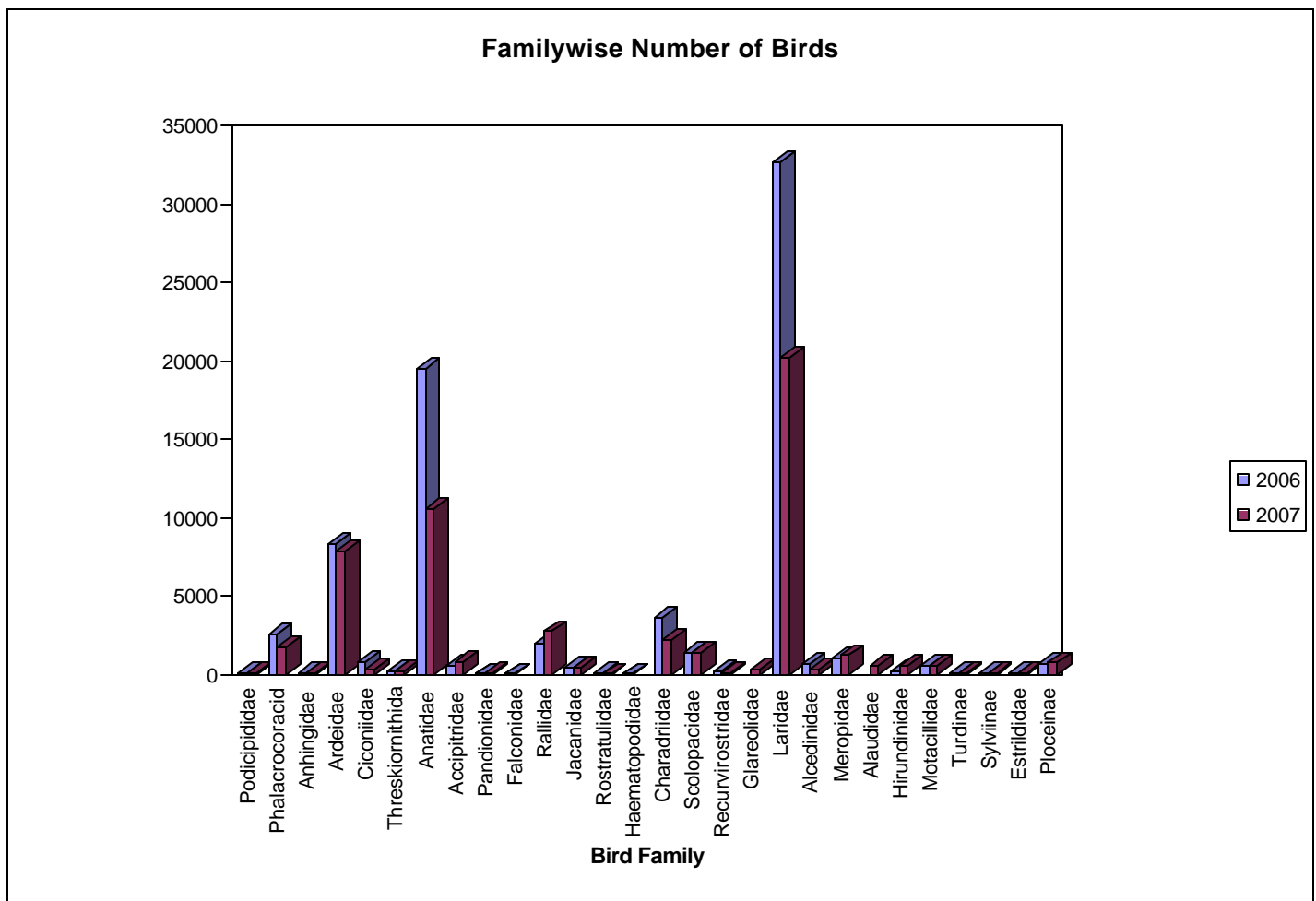
Census was conducted at 65 sites in 2006 and at 49 sites in 2007; 28 of the 65 sites of 2006 were not counted in 2007 due to various reasons, but 10 new sites were included in the 2007 census. 75683 birds consisting of 114 species were counted in January 2006 and 54,295 birds consisting of 115 species were counted from the 49 sites in 2007. A total of 129 species were recorded in the census (see Appendix: the bird list) belonging to 28 families. As mentioned above, the census done in April 2006 proved to be the least productive, as many of the wetlands had dried up in the summer and also because most of the migratory birds were absent.

80 species of the birds recorded could be regarded as true waterbirds. But as the remaining species of birds also were dependent on wetlands, they are also important components of the wetland ecosystem. 72 species (55.8 %) were migrants to Kerala and the rest resident.

### Representation of Bird families

In both years, birds belonging to the family Laridae (Gulls & Terns) were the most numerous followed by Anatidae (Ducks & Teals), Ardeidae (Hérons, Egrets & Bitterns), Charadriidae (Plovers & Lapwings), Phalacrocoracidae (Cormorants & Shags), Scolopacidae (Sandpipers, Snipes and Curlews) and Rallidae (Rails, Moorhen & Coot). Presence of these species in high number is because of the gregarious nature of these species as well as the presence of the preferred habitat of the species. For the details of the number of birds belonging to different families counted in each year, see Figure 3 and Table 1.

**Figure 3:**



**Table 1: Representation of Bird families**

Family	Group	2006		2007	
		Number of Species	Number of Birds	Number of Species	Number of Birds
Podicipididae	Grebes	1	22	1	84
Phalacrocoracidae	Cormorants, Shags	3	2564	3	1673
Anhingidae	Darter	1	85	1	35
Ardeidae	Hérons, Egrets, Bitterns	13	8275	13	7843
Ciconiidae	Storks	3	747	3	285
Threskiornithidae	Ibises, Spoonbill	3	178	2	218
Anatidae	Ducks, Teals	8	19498	7	10582
Accipitridae	Eagles, Kites, Harriers	8	574	6	758
Pandionidae	Osprey	1	5	1	7
Falconidae	Falcons	1	3		
Rallidae	Rails, Moorhens, Coots	6	1908	6	2712
Jacanidae	Jacanas	2	387	2	416
Rostratulidae	Painted-Snipe	1	9	1	6
Haematopodidae	Oystercatcher	1	2		
Charadriidae	Plovers, Lapwings	8	3589	9	2224
Scolopacidae	Sandpipers, Snipes, Curlews	21	1369	17	1401
Recurvirostridae	Avocet, Stilt	1	128	1	75
Glareolidae	Pratincoles			2	284
Laridae	Gulls, Terns	12	32695	12	20166
Alcedinidae	Kingfishers	5	634	4	325
Meropidae	Bee-eaters	1	953	1	1183
Alaudidae	Larks			1	500
Hirundinae	Swallows	2	151	4	504
Motacillidae	Wagtails, Pipits	7	570	6	479
Turdinae	Robins, Stonechat	1	9	2	11
Sylvinae	Warblers, Prinias	2	59	5	107
Estrildidae	Munias	1	50	2	12
Ploceinae	Weavers	1	699	2	709

### Distribution of Species

In 2006, out of the 114 species recorded in all, 7% occurred in 50 – 67 sites, 5.3% in 30 – 45 sites, 7% in 20 – 30 sites, 13.2% in 20 – 30 sites and 67.5% in 1 – 10 sites. In 2007 also, the distribution of species was more or less on the same lines. Brahminy Kite *Haliastur indus* was the most widespread species found in 59 sites out of 67 in 2006 and in 41 out of 49 in 2007. The other well distributed species were: Pond Heron *Ardeola grayii* (58 sites in 2006 and 44 sites in 2007), Median Egret *Mesophoyx intermedia* (58 sites in 2006 and 36 in 2007), Little Cormorant

*Phalacrocorax niger* (57 sites in 2006 and 41 in 2007), Small Blue Kingfisher *Alcedo atthis* (56 sites in 2006 and 34 in 2006), Little Egret *Egretta garzetta* (53 sites in 2006 and 47 in 2007) and White-breasted Kingfisher *Halcyon smyrnensis* (51 sites in 2006 and 36 in 2007).

Table 2 shows the 15 most numerous species of north Kerala wetlands, as seen in the two censuses (minimum qualification: 1000). 8 of these were migratory species, and the rest resident. As far as Kerala is concerned, Cattle Egret *Bubulcus ibis* is a winter visitor. Little Egret and Median Egret breed mainly in the Wayanad district of the study area and there are several reports of the Lesser Whistling-Duck breeding in north Kerala. But, in the case of these species, considering the known breeding records and the numbers seen in winter, it is possible that there is a migrant population also wintering in the study area.

**Table 2. The most numerous birds:**

Sl. No.	Species	2006		2007	
		Number	Sites	Number	Sites
1	Brown-headed Gull <i>Larus brunnecephalus</i>	14,360	7	3125	6
2	Black-headed Gull <i>Larus ridibundus</i>	8368	9	4426	5
3	Northern Pintail <i>Anas acuta</i>	8338	7	1353	3
4	Garganey <i>Anas querquedula</i>	7174	8	5475	7
5	Pallas's Gull <i>Larus ichthyaetus</i>	4481	6	4651	3
6	Yellow-legged Gull <i>Larus cachinnans</i>	4000	1	7000	1
7	Lesser Whistling-Duck <i>Dendrocygna javanica</i>	3413	16	2722	10
8	Lesser Sand Plover <i>Charadrius mongolus</i>	2717	12	1559	10
9	Cattle Egret <i>Bubulcus ibis</i>	2715	51	3520	34
10	Little Cormorant <i>Phalacrocorax niger</i>	2512	57	1593	41
11	Pond Heron <i>Ardeola grayii</i>	1910	58	1631	44
12	Little Egret <i>Egretta garzetta</i>	1895	53	1221	47
13	Purple Moorhen <i>Porphyrio porphyrio</i>	1533	23	2559	17
14	Median Egret <i>Mesophoyx intermedia</i>	1160	58	999	36
15	Cotton Teal <i>Nettapus coromandelicus</i>			1006	5

25 species were found in numbers ranging from 100 – 1000 in 2006, while 21 species belonged to this category in 2007.

### Important wetlands

15 important sites with high number of birds (above 1000) as well as high species diversity are listed in Table 3. Kattampally led with the highest number of birds as well as high number of species, followed by Purathur estuary in 2007; in 2007, Purathur had more number of birds, but Kattampally still had much higher bird diversity. Mavoor wetlands recorded the highest species diversity in 2006. The data showed that at the estuaries, the high number of birds was due to the congregation of Laridae (Gulls and Terns) whereas at the other wetlands, the number was boosted by the presence of Anatidae (Ducks and Teals).

**Table 3. The most important Wetlands**

Sl. No.	Wetland	2006		2007	
		Total number of birds	Number of Species	Total number of birds	Number of Species
1	Kattampally	18622	51	8538	50
2	Purathur estuary	10411	43	12679	33
3	Kumbala-Shiriya (estuary)	9084	19	1021	17
4	Muzhappilangad(estuary)	5393	15	Not counted	
5	Kasaragod	4219	23	54	8
6	Cherandathur	3283	33	3964	24
7	Kadalundy(estuary)	2705	29	987	21
8	Vemom(paddyfields)	2032	20	1806	25
9	Mavoor Vayal (Kalpally-Palliyol)	1823	58	3004	44
10	Korapuzha estuary	1286	15	979	17
11	Vlliyookavu-Kabani	1116	22	1739	7
12	Mogral			6594	23
13	Velimukku Chali			1190	20
14	Mappila Bay			1084	8
15	Ezhome			1063	38

### Familywise analysis

#### 1. Podicipididae: Grebes

Only 22 Little Grebe *Tachybaptus ruficollis* were counted in the census from 6 sites in 2006 while 84 from 10 sites were counted in 2007. This species needs at least some open water

and their presence in low numbers only might be due to the fact that most of the wetlands did not meet this requirement.

## **2. Phalacrocoracidae: Cormorants, Shags**

Little Cormorant *Phalacrocorax niger* was one of the most numerous species and fairly widespread also (Table 2). Interestingly, this species was uncommon in north Kerala in the 1980s and started spreading throughout the region since the 1990s (Sashikumar pers.observ.). It seems that Great Cormorant *Phalacrocorax carbo*, after establishing its presence in south Kerala in the last 2 decades, is extending its range to north Kerala also by its presence in Banasura Sagar and Peruvannamoozhi reservoirs in 2006 and in Kattampally also in 2007. Indian Shag *Phalacrocorax fuscicollis* was sighted at 2 sites only in 2006 but was seen in 5 sites in 2007.

## **3. Anhingidae: Darter**

85 Darters *Anhinga melanogaster* were counted at 9 sites, out of which 27 were seen at Mavoor vayal in 2006; 35 Darters were seen in 9 sites in 2007, with 19 birds at Mavoor Vayal. This species is included in the Near Threatened category of the World Conservation Union (IUCN).

## **4. Ardeidae: Herons, Egrets and Bitterns**

Many members of this family were well represented in most of the wetlands both numerically and specieswise (Table 2). At Mappila Bay fishing harbour, Kannur, 360 Little Egrets *Egretta garzetta* were seen in 2006 and 250 in 2007.

## **5. Ciconiidae: Storks**

Asian Openbill-Stork *Anastomus oscitans* (712 in 24 sites in 2006) deserves special mention. This species was quite rare in Kerala till the mid 1990s; now they are seen in many wetlands in good numbers too: 182 in Kattampally, 88 in Thattanthuruthy (Olipram), 72 in Elathuruthy Pandy and 60 in Purathur estuary – all in 2006. In 2007, 231 Openbills were seen in 19 sites. A single Painted Stork *Mycteria leucocephala* was seen at Purathur estuary in 2006 whereas 15 were seen at the same site in 2007. 34 White-necked Storks *Ciconia episcopus* were reported from 6 sites in 2006 and 39 in 9 sites in 2007.

## **6. Threskionithidae: Ibises, Spoonbills**

123 Oriental White Ibis *Threskiornis melanocephalus* was recorded from 12 sites in 2006 and 212 in 12 sites in 2007. Glossy Ibis *Plegadis falcinellus* (52) was recorded at Kattampally only in 2006; 6 seen at Ayyoth (Kannur district) was the only sighting during the 2007 census. One Eurasian Spoonbill *Platalea leucorodia* each was seen at 3 sites in 2006 while none was seen in 2007.



## 7. Anatidae: Ducks

25.8% of all the birds recorded during the 2006 census and 19.4% in the 2007 census belonged to this family. Northern Pintail and Garganey, which are migratory, constituted 79.6% of this. Lesser Whistling-Duck is the only resident duck seen in large numbers (Table 2). In 2006, 507 Cotton Teal *Nettapus coromandelianus*, another resident duck was seen in 8 sites; out of this 418 were seen at Mavoor Vayal (Kozhikode district); in 2007, 1006 were seen at 5 sites: 400 were seen at Mavoor Vayal and 200 each at Cherandathur (Kozhikode district) and Velimukku Chali (Malappuram district).

## 8. Accipitridae: Hawks, eagles, Kites, Harriers

A single Greater Grey-headed Fish-Eagle *Ichthyophaga ichthyaetus* was seen at Peruvannamoozhi reservoir in 2006. 7 White-bellied Sea-Eagles *Haliaeetus leucogaster* were sighted at 6 sites in 2006 and 12 from 7 sites in 2007, all from the seacoast of Kannur and Kasaragod districts. Brahminy Kite was the most widespread raptor (Table 2) followed by the Western Marsh Harrier *Circus aurogenosus* (45 from 11 sites in 2006; 53 from 21 sites in 2007). Three species of Aquila eagles- Greater Spotted Eagle *Aquila clanga* (12), Indian Spotted Eagle *Aquila hastata* (5) and Steppe Eagle *Aquila nipalensis* (2) – were recorded at Kattampally in 2006; 15 Greater Spotted Eagle and 6 Indian Spotted Eagle were seen here in 2007 also. Pallid Harrier *Circus macrourus* was recorded at 3 sites of Wayanad in 2006, but none were seen in 2007.

## 9. Pandionidae: Osprey

Osprey *Pandion haliaetus*, a migratory fish eagle, was recorded from 5 sites (one each) in 2006 and 7 in 5 sites in 2007.

## 10. Falconidae: Falcons

Peregrine Falcon *Falco peregrinus* (3) was seen at 2 sites in 2006.

## 11. Rallidae: Rails, Crakes, Moorhens and Coots

6 species of this family were recorded; Purple Moorhen *Porphyrio porphyrio* being the most numerous and (Table 2) while the White-breasted Waterhen *Amaurornis phoenicurus* was the most widespread (132 in 32 sites in 2006 and 122 in 22 sites in 2007). The absence of Watercock *Gallicrex cinerea* in all the wetlands in 2006 may be an indication of the rarity of this species in most wetlands of north Kerala, but 5 were seen in 2 sites – one in Kannur and the second in Malappuram district- in 2007.

## 12. Jacanidae: Jacanas

Pheasant-tailed Jacana *Hydrophasianus chirurgus* was comparatively uncommon (44 in 6 sites in 2006, 34 in 9 sites in 2007) while Bronze-winged Jacana *Metopidius indicus* (343 in 20 sites in 2006 and 382 in 12 sites in 2007) was fairly common.

### **13. Rostratulidae: Painted-Snipes**

Greater Painted-Snipe *Rostratula benghalensis* : 9 seen at 3 sites in 2006 and 6 in 2 sites in 2007.

### **14. Haematopodidae: Oystercatcher**

2 individuals of Eurasian Oystercatcher *Haematopus ostralegus* seen at Dharmadam estuary in 2006 was the only sighting during the censuses.

### **15. Charadriidae: Plovers, Lapwings**

8 species of this family were recorded in 2006 and 9 species in 2007, most of them in reasonably good numbers in appropriate habitats. Red-wattled Lapwing *Vanellus indicus* (279 in 30 sites) was the most widespread whereas Lesser Sand Plover *Charadrius mongolus* (2717 in 12 sites) was the most numerous. The sighting of a Grey-headed Lapwing *Vanellus cinereus* at Punchpadam- Ariyallur (Malappuram Dt.) in 2007 is the only record of this rare bird in Kerala out side the Kole wetlands.

### **16. Scolopacidae: Sandpipers, Stints, Snipes, Godwits and Curlews**

21 species recorded in 2006 and 17 in 2007. Common Sandpiper *Actitis hypoleucos* (350 in 43 sites in 2006 and 191 in 30 sites in 2007) was the most widespread species of this family, followed by Common Red Shank *Tringa totanus* (186 in 18 sites in 2006, 282 in 15 sites in 2007), Common Green Shank *Tringa nebularia* (110 in 21 sites in 2006 and 94 in 20 sites in 2007) and Wood Sandpiper *Tringa glareola* (183 in 16 sites in 2006 and 613 in 18 sites in 2007). 75 Eurasian Curlews *Numenius arquata* were seen at Purathur estuary in 2006.

### **17. Laridae: Gulls and Terns**

43.2% of all birds recorded belonged to Laridae in 2006 and 37.14 % in 2007. Four species of gulls were recorded in large numbers (Table2).

Wetland dependent species belonging to the families Alcedinidae (Kingfishers), Meropidae (Bee-eaters), Hirundinidae (Swallows), Motacillidae (Wagtails and Pipits) and Ploceinae (Weavers) also were well represented in the census. A large swarm of Greater short-toed Lark *Calendrella brachydactyla* (Alaudidae) of 500 individuals was seen at Chengurichal, Kannur district.

### **Wetlands of Great Conservation Value**

Under the Important Bird Area Programme, Birdlife International has set several criteria for identifying Important Bird Areas (IBA). In the case of congregatory waterbird species, a site is considered important if it is known or thought to hold on a regular basis, greater than or equal to 1% of a biogeographic population. The censuses have revealed that six wetlands fit into this

category, out of these, Kattampally has already been declared as an IBA. Details are given in Table 4.

**Table 4: Wetlands holding 1% of the biogeographical population of congregatory waterbird species**

Species	Threshold Number (1% of biogeographical population)	Site	Number recorded	
			2006	2007
Garganey <i>Anas querquedula</i>	2500	Kattampally	6538	3405
Pallas's Gull <i>Larus ichthyaetus</i>	1000	Kasaragod Kumbala-Shiriya Mogral	1000 3000	400 4500
Brown-headed Gull <i>Larus brunnicephalus</i>	1000	Purathur Muzhappilangad Kasaragod Kumbala-Shiriya Mogral	3000 5000 2000 4000	1500   400 1000

### Globally Threatened Species

Another criterion for a site to be an Important Bird Area is that it holds a significant numbers of a globally threatened species or other species of global conservation concern. Eight species categorized as Vulnerable and Near Threatened has been recorded from various sites. These sites are entitled to be declared as IBAs.

**Table 5: Globally threatened species**

Sl. No.	Species	IUCN Status	Sites (Numbers)	
			2006	2007
1	Darter	Near Threatened	9 (85)	9 (35)
2	Painted Stork	Near Threatened	1 (1)	1 (15)
3	Oriental White Ibis	Near Threatened	12 (123)	8 (39)
4	Greater Grey-headed Fish-Eagle	Near Threatened	1 (1)	
5	Pallid harrier	Near Threatened	3 (10)	
6	Greater Spotted Eagle	Vulnerable	1 (11)	1 (15)
7	Indian Spotted Eagle	Vulnerable	1 (5)	1 (6)
8	Black-tailed Godwit	Near Threatened	2 (16)	1 (45)

## **Comparison of the two censuses**

The total number of birds in the 2007 census was found to be low than the previous year's census. Only one site with more than 1000 birds counted in 2006 (Muzhappilangad Estuary, Kannur district) was omitted in 2007. In many sites, especially estuaries, the number of Laridae (Gulls, Terns) usually fluctuates depending on the tide, movement of fishing boats etc.. The absence of the birds of this group in some sites where they were found in good numbers in 2006 was one reason for the overall reduction in the number of birds.

But, the low number of Anatidae (Ducks, Teals) at Kattampally is quite alarming: 14935 in 2006 were reduced to 5515, lower by 63%. The area around Varam Kadavu, where filling up of the wetland is going on is the place where the highest concentration of Anatidae is found. The disturbance, obviously, is taking its toll on the wetland birds.

## **Disturbances and Threats**

Almost all wetlands visited during the census were under threat, mainly due to habitat alteration and development activities. The case of Kattampally is critical: two bridges and approach roads are under construction dividing the wetland into several fragments. Once the roads come up, the marshes along them on both sides are liable to be filled up and converted to house plots or factories. Filling up of the wetland for the construction of a resort is already underway. Immediate attention from the concerned authorities only will prevent such an imminent disaster.

## **Acknowledgements**

We gratefully acknowledge the help of all the voluntary participants of the census and the forest department officials for the enthusiasm shown in conducting the census. Without their help, this study would not have been possible.

## Appendix 2: Birds in North Kerala Wetlands

**Note:** The nomenclature of the list follows Manakkatan & Pittie (2001). The number in parenthesis after the English name corresponds to the number of the species in *A Synopsis of the Birds of India and Pakistan* (Ripley 1982).

**M** : Migratory to Kerala

Sl. No.	English Name	Scientific Name
	<b>Grebes</b>	<b>Podicipedidae</b>
1	Little Grebe (5)	<i>Tachybaptus ruficollis</i> (Pallas, 1764)
	<b>Cormorants/Shags</b>	<b>Phalacrocoracidae</b>
2	Little Cormorant (28)	<i>Phalacrocorax niger</i> (Vieillot, 1817)
3	Indian Shag (27)	<i>Phalacrocorax fuscicollis</i> Stephens, 1826
4	Great Cormorant (26)	<i>Phalacrocorax carbo</i> (Linnaeus, 1758)
	<b>Darters</b>	<b>Anhingidae</b>
5	Darter (29)	<i>Anhinga melanogaster</i> Pennant, 1769
	<b>Herons, Egrets &amp; Bitterns</b>	<b>Ardeidae</b>
6	Little Egret (49)	<i>Egretta garzetta</i> (Linnaeus, 1766)
7	Western Reef-Egret (50)	<i>Egretta gularis</i> (Bosc, 1792) <b>M</b>
8	Grey Heron (35-36)	<i>Ardea cinerea</i> Linnaeus, 1758
9	Purple Heron (37-37a)	<i>Ardea purpurea</i> Linnaeus, 1766
10	Large Egret (45-46)	<i>Casmerodius albus</i> (Linnaeus, 1758)
11	Median Egret (47, 48)	<i>Mesophoyx intermedia</i> (Wagler, 1829)
12	Cattle Egret (44)	<i>Bubulcus ibis</i> (Linnaeus, 1758)
13	Indian Pond-Heron (42-42a)	<i>Ardeola grayii</i> (Sykes, 1832)
14	Little Green Heron (38-41)	<i>Butorides striatus</i> (Linnaeus, 1758)
15	Black-crowned Night-Heron (52)	<i>Nycticorax nycticorax</i> (Linnaeus, 1758)
16	Yellow Bittern (57)	<i>Ixobrychus sinensis</i> (Gmelin, 1789)
17	Chestnut Bittern (56)	<i>Ixobrychus cinnamomeus</i> (Gmelin, 1789)
18	Black Bittern (58)	<i>Dupetor flavicollis</i> (Latham, 1790)
	<b>Storks</b>	<b>Ciconiidae</b>
19	Painted Stork (60)	<i>Mycteria leucocephala</i> (Pennant, 1769) <b>M</b>
20	Asian Openbill-Stork (61)	<i>Anastomus oscitans</i> (Boddaert, 1783)
21	White-necked Stork (62)	<i>Ciconia episcopus</i> (Boddaert, 1783)
	<b>Ibises &amp; Spoonbills</b>	<b>Threskiornithidae</b>
22	Glossy Ibis (71)	<i>Plegadis falcinellus</i> (Linnaeus, 1766) <b>M</b>
23	Oriental White Ibis (69)	<i>Threskiornis melanocephalus</i> (Latham, 1790)
24	Eurasian Spoonbill (72)	<i>Platalea leucorodia</i> Linnaeus, 1758 <b>M</b>
	<b>Swans, Geese &amp; Ducks</b>	<b>Anatidae</b>
25	Large Whistling-Duck (89)	<i>Dendrocygna bicolor</i> (Vieillot, 1816) <b>M</b>
26	Lesser Whistling-Duck (88)	<i>Dendrocygna javanica</i> (Horsfield, 1821)
27	Cotton Teal (114)	<i>Nettapus coromandelianus</i> (Gmelin, 1789)
28	Spot-billed Duck (97-99)	<i>Anas poecilorhyncha</i> J.R. Forester, 1781 <b>M</b>
29	Northern Shoveller (105)	<i>Anas clypeata</i> Linnaeus, 1758 <b>M</b>
30	Northern Pintail (93)	<i>Anas acuta</i> Linnaeus, 1758 <b>M</b>

31	Garganey (104)	<i>Anas querquedula</i> Linnaeus, 1758	<b>M</b>
32	Common Teal (94)	<i>Anas crecca</i> Linnaeus, 1758	<b>M</b>
	<b>Hawks, Eagles, Buzzards, Old World Vultures, Kites, Harriers</b>		
33	Black Kite (132-134)	<b>Accipitridae</b>	
34	Brahminy Kite (135)	<i>Milvus migrans</i> (Boddaert, 1783)	
35	White-bellied Sea-Eagle (173)	<i>Haliastur indus</i> (Boddaert, 1783)	
36	Greater Grey-headed Fish-Eagle (175-176)	<i>Haliaeetus leucogaster</i> (Gmelin, 1788)	
37	Western Marsh-Harrier (193)	<i>Ichthyophaga ichthyaetus</i> (Horsfield, 1821)	
38	Pallid Harrier (190)	<i>Circus aeruginosus</i> (Linnaeus, 1758)	<b>M</b>
39	India Spotted Eagle (171)	<i>Circus macrourus</i> (S.G. Gmelin, 1770)	<b>M</b>
40	Greater Spotted Eagle (170)	<i>Aquila hastata</i> Lesson, 1834	<b>M</b>
		<i>Aquila clanga</i> Pallas, 1811	<b>M</b>
41	Steppe Eagle (169)	<i>Aquila nipalensis</i> Hodgson, 1833	<b>M</b>
	<b>Osprey</b>	<b>Pandionidae</b>	
42	Osprey (203)	<i>Pandion haliaetus</i> (Linnaeus, 1758)	<b>M</b>
	<b>Falcons</b>	<b>Falconidae</b>	
43	Peregrine Falcon (209-211)	<i>Falco peregrinus</i> Tunstall, 1771	<b>M</b>
	<b>Rails, Crakes, Moorhens, Coots</b>	<b>Rallidae</b>	
44	White-breasted Waterhen (343-345)	<i>Amaurornis phoenicurus</i> (Pennant, 1769)	
45	Baillon's Crake (337)	<i>Porzana pusilla</i> (Pallas, 1776)	<b>M</b>
46	Ruddy-breasted Crake (339-340)	<i>Porzana fusca</i> (Linnaeus, 1766)	
47	Watercock (346)	<i>Gallinula chloropus</i> (Linnaeus, 1758)	
48	Purple Moorhen (348-349)	<i>Fulica atra</i> Linnaeus, 1758	<b>M</b>
49	Common Moorhen (347-347a)	<b>Jacanianae</b>	
50	Common Coot (350)	<i>Hydrophasianus chirurgus</i> (Scopoli, 1786)	
	<b>Jacanas</b>	<i>Metopidius indicus</i> (Latham, 1790)	
51	Pheasant-tailed Jacana (358)	<b>Rostratulidae</b>	
52	Bronze-winged Jacana (359)	<i>Rostratula benghalensis</i> (Linnaeus, 1758)	
	<b>Painted-Snipes</b>	<b>Haematopodidae</b>	
53	Greater Painted-Snipe (429)	<i>Haematopus ostralegus</i> Linnaeus, 1758	<b>M</b>
	<b>Oystercatcher</b>	<b>Charadriidae</b>	
54	Eurasian Oystercatcher (360-361)	<i>Pluvialis fulva</i> (Gmelin, 1789)	<b>M</b>
	<b>Plovers, Dotterels, Lapwings</b>	<i>Pluvialis squatarola</i> (Linnaeus, 1758)	<b>M</b>
55	Pacific Golden-Plover (373)	<i>Charadrius dubius</i> Scopoli, 1786	
56	Grey Plover (371)	<i>Charadrius alexandrinus</i> Linnaeus, 1758	<b>M</b>
57	Little Ringed Plover (379-380)	<i>Charadrius mongolus</i> Pallas, 1776	<b>M</b>
58	Kentish Plover (381-382)	<i>Charadrius leschenaultii</i> Lesson, 1826	<b>M</b>
59	Lesser Sand Plover (384-384a)	<i>Vanellus malabaricus</i> (Boddaert, 1783)	
60	Greater Sand Plover (374)	<i>Vanellus cinereus</i> (Linnaeus, 1758)	<b>M</b>
61	Yellow-wattled Lapwing (370)	<i>Vanellus indicus</i> (Boddaert, 1783)	
62	Grey-headed Lapwing (365)	<b>Scolopacidae</b>	
63	Red-wattled Lapwing (366-368)	<i>Gallinago stenura</i> (Bonaparte, 1830)	<b>M</b>
	<b>Sandpipers, Stints, Snipes, Godwits &amp; Curlews</b>		
64	Pintail Snipe (406)		

- 65 Common Snipe (409)  
 66 Jack Snipe (410)  
 67 Black-tailed Godwit (389-390)  
 68 Bar-tailed Godwit (391-391a)  
 69 Whimbrel (385-386)  
 70 Eurasian Curlew (387-388)  
 71 Common Redshank (393, 394)  
 72 Marsh Sandpiper (395)  
 73 Common Greenshank (396)  
 74 Green Sandpiper (397)  
 75 Wood Sandpiper (398)  
 76 Terek Sandpiper (400)  
 77 Common Sandpiper (401)  
 78 Ruddy Turnstone (402)  
 79 Sanderling (414)  
 80 Little Stint (416)  
 81 Dunlin (420, 421)  
 82 Curlew Sandpiper (422)  
 83 Broad-billed Sandpiper (424-425)  
**Ibisbill, Avocets & Stilts**  
 84 Black-winged Stilt (430-431)  
**Coursers & Pratincoles**  
 85 Oriental Pratincole (443)  
 86 Small Pratincole (444)  
**Gulls, Terns & Noddies**  
 87 Heuglin's Gull (450)  
 88 Yellow-legged Gull (451)  
 89 Pallas's Gull (453)  
 90 Brown-headed Gull (454)  
 91 Black-headed Gull (455)  
 92 Gull-billed Tern (460-461)  
 93 Caspian Tern (462)  
 94 River Tern (463)  
 95 Lesser Crested Tern (479)  
 96 Large Crested Tern (478)  
 97 Sandwich Tern (480)  
 98 Common Tern (464-465)  
 99 Saunders's Tern (477)  
 100 Whiskered Tern (458)  
**Kingfishers**  
 101 Small Blue Kingfisher (722-724)  
 102 Stork-billed Kingfisher (730-732)  
 103 White-breasted Kingfisher (735-738)  
 104 Black-capped Kingfisher (739)  
 105 Lesser Pied Kingfisher (719-720)  
**Bee-eaters**

- Gallinago gallinago* (Linnaeus, 1758) **M**  
*Lymnocyrtus minimus* (Brünnich, 1764) **M**  
*Limosa limosa* (Linnaeus, 1758) **M**  
*Limosa lapponica* (Linnaeus, 1758) **M**  
*Numenius phaeopus* (Linnaeus, 1758) **M**  
*Numenius arquata* (Linnaeus, 1758) **M**  
*Tringa totanus* (Linnaeus, 1758) **M**  
*Tringa stagnatilis* (Bechstein, 1803) **M**  
*Tringa nebularia* (Gunner, 1767) **M**  
*Tringa ochropus* Linnaeus, 1758 **M**  
*Tringa glareola* Linnaeus, 1758 **M**  
*Xenus cinereus* (Guldenstadt, 1774) **M**  
*Actitis hypoleucos* Linnaeus, 1758 **M**  
*Arenaria interpres* (Linnaeus, 1758) **M**  
*Calidris alba* (Pallas, 1764) **M**  
*Calidris minuta* (Leisler, 1812) **M**  
*Calidris alpina* (Linnaeus, 1758) **M**  
*Calidris ferruginea* (Pontoppidan, 1813) **M**  
*Limicola falcinellus* (Pontoppidan, 1763) **M**  
**Recurvirostridae**  
*Himantopus himantopus* (Linnaeus, 1758)  
**Glareolidae**  
*Glareola maldivarum* J.R. Forster, 1795  
*Glareola lactea* Temminck, 1820  
**Laridae**  
*Larus heuglini* Bree, 1876 **M**  
*Larus cachinnans* Pallas, 1811 **M**  
*Larus ichthyaetus* Pallas, 1773 **M**  
*Larus brunnicephalus* Jerdon, 1840 **M**  
*Larus ridibundus* Linnaeus, 1766 **M**  
*Gelochelidon nilotica* (Gmelin, 1789) **M**  
*Sterna caspia* Pallas, 1770 **M**  
*Sterna aurantia* J.E. Gray, 1831 **M**  
*Sterna bengalensis* Lesson, 1831 **M**  
*Sterna bergii* Lichtenstein, 1823 **M**  
*Sterna sandvicensis* Latham, 1787 **M**  
*Sterna hirundo* Linnaeus, 1758 **M**  
*Sterna saundersi* Hume, 1877 **M**  
*Chlidonias hybridus* (Pallas, 1811) **M**  
**Alcedinidae**  
*Alcedo atthis* (Linnaeus, 1758)  
*Halcyon capensis* (Linnaeus, 1766)  
*Halcyon smyrnensis* (Linnaeus, 1758)  
*Halcyon pileata* (Boddaert, 1783)  
*Ceryle rudis* (Linnaeus, 1758)  
**Meropidae**

- 106 Blue-tailed Bee-eater (748)  
**Larks**
- 107 Greater Short-toed Lark (885-886)  
**Swallows & Martins**
- 108 Common Swallow (916-918)  
109 Wire-tailed Swallow (921)  
110 Red-rumped Swallow (923-928)  
111 Streak-throated Swallow (922)  
**Wagtails & Pipits**
- 112 White Wagtail (1885-1890)  
113 Large Pied Wagtail (1891)  
114 Citrine Wagtail (1881-1883)  
115 Yellow Wagtail (1875-1880)  
116 Grey Wagtail (1884)  
117 Richard's Pipit (1857)  
118 Paddyfield Pipit (1858-1860)  
**Thrushes, Shortwings, Robins, Forktails, Wheaters**
- 119 Bluethroat (1644-1646a)  
120 Common Stonechat (1695-1698)  
**Goldcrest, Prinias, Tesias, Warblers**
- 121 Streaked Fantail-Warbler (1498-1500a)  
122 Ashy Prinia (1515-1518)  
123 Plain Prinia (1510-1514)  
124 Blyth's Reed-Warbler (1556)  
125 Indian Great Reed-Warbler (1550-1552)  
**Munias (Estrildid Finches)**
- 126 Red Munia (1964)  
127 Black-headed Munia (1976-1978)  
**Weavers**
- 128 Streaked Weaver (1962-1963)  
129 Baya Weaver (1957-1959)
- Merops philippinus* Linnaeus, 1766  
**Alaudidae**
- Calandrella brachydactyla* (Leisler, 1814) **M**  
**Hirundinidae**
- Hirundo rustica* Linnaeus, 1758 **M**  
*Hirundo smithii* Leach, 1818 **M**  
*Hirundo daurica* Linnaeus, 1771  
*Hirundo fluviicola* Blyth, 1855 **M**  
**Motacillidae**
- Motacilla alba* Linnaeus, 1758 **M**  
*Motacilla maderaspatensis* Gmelin, 1789  
*Motacilla citreola* Pallas, 1776 **M**  
*Motacilla flava* Linnaeus, 1758 **M**  
*Motacilla cinerea* Tunstall, 1771 **M**  
*Anthus richardi* Vieillot, 1818 **M**  
*Anthus rufulus* Vieillot, 1818  
**Turdinae**
- Luscinia svecica* (Linnaeus, 1758) **M**  
*Saxicola torquata* (Linnaeus, 1766) **M**  
**Sylviinae**
- Cisticola juncidis* (Rafinesque, 1810)  
*Prinia socialis* Sykes, 1832  
*Prinia inornata* Sykes, 1832  
*Acrocephalus dumetorum* Blyth, 1849 **M**  
*Acrocephalus stentoreus* (Hemprich & Ehrenberg, 1833)  
**Estrildidae**
- Amandava amandava* (Linnaeus, 1758)  
*Lonchura malacca* (Linnaeus, 1766)  
**Ploceinae**
- Ploceus manyar* (Horsfield, 1821)  
*Ploceus philippinus* (Linnaeus, 1766)